

Claims

CLAIM 1 (Currently Amended)

1. Method of measurement of characteristics of a body, wherein said body comprises periodic array of more than two geometrically equivalent elements, and some or all of said elements can be absent at some moment of time, and said method compris[es]ing steps of following:

- i) digital acquisition of some fragments of image from a digital video stream source at first moment of time;
- ii) digital acquisition of same fragments of image from the digital video stream source at second moment of time;
- iii) comparison of individual image fragments taken at first moment of time with individual image fragments taken at second moment of time for the same physical location fragment, wherein said comparison uses at least one pixel from said first image fragment and at least one different pixel from said second image fragment;
- iv) repeating steps ii) and iii) sequentially in a way that time span between produced comparison results is exactly equal to time span between said acquisitions.

CLAIM 2 (Currently Amended)

2. Method of claim 1 where said image fragments are directly extracted from digital video stream and the collection of sequences of the comparison data for all the fragments forms a result stream.

CLAIM 3 (Currently Amended)

3. Method of claim 1 where said image fragments are extracted from whole single frame of digital video stream and the collection of sequences of the comparison data for all the fragments forms a result stream.

CLAIM 4 (Currently Amended)

4. Apparatus implementing method of claim 1 and comprising:

- i) laser light source and collimator;
- ii) spatial light modulator capable of splitting of single monochrome light beam into ordered plurality of light beams;
- iii[v]) objective lens;
- iv) video capture device capable of acquiring optical images.

CLAIM 5 (Original)

5. Apparatus of claim 4 further comprising microarray of lenses.

CLAIM 6 (Currently Amended)

6. Method of claim 1 further utilizing measurements of characteristics of a body, wherein said body comprises periodic array of more than two geometrically equivalent elements, and some or all of said elements can be absent at some moment of time, and said method comprises following:

- i) source of laser radiation;
- ii) optical elements capable of focusing said radiation onto surface of said body;
 - i) optical image capture device
 - ii) digital acquisition of some fragments of image from said capture device at first moment of time, where in said fragments contain distribution of light intensity of a beam reflected from said focal location of said body
 - iii) digital acquisition of same fragments of image from said capture device at second moment of time, where in said fragments contain distribution of light intensity of a beam reflected from said focal location of said body
 - iv) comparison of individual image fragment taken at first moment of time with individual image fragment taken at second moment of time for the same fragment, wherein said comparison uses at least one pixel from said first image fragment and at least one different pixel from said second image fragment.

CLAIM 7 (Original)

7. Method of claim 6 where said image fragments are directly extracted from digital video stream.

CLAIM 8 (Original)

8. Method of claim 6 where said image fragments are extracted from whole single frame of digital video stream.

CLAIM 9 (Currently Amended)

9. Apparatus implementing method of claim 6 and comprising at least:

- i) laser light source and collimator;
- ii) spatial light modulator capable of splitting of single monochrome light beam into ordered plurality of light beams;
- [v]iii) objective lens;
- iv[ii]) video capture device capable of acquiring optical images.

CLAIM 10 (Original)

10. Apparatus of claim 9 further comprising microarray of lenses.

CLAIM 11 (Original)

11. Method of claim 6 further comprising scanning of said body surface with respect to said focusing optical elements.

CLAIM 12 (Currently Amended)

12. Apparatus of claim 9 or claim 10 ~~further implementing method of claim 10 and~~ further comprising lateral positioning stage with positioning plane parallel to said objective lens/lenses.

Claim 13 (Currently Amended)

Apparatus implementing method of claim 1 to supply data for feedback control operations of plurality of micromechanical or micro electro-mechanical elements representing parts of single device, wherein said method additionally comprises:
i) use of laser light source with output power more than five (5) milliwatt;
ii)splitting of said light onto plurality of beams;
iii)controlling propagation of said beams using electronically controlled optical switching device;
iv)focusing said beams onto surface of said device.

Claim 14 (Currently amended)

Apparatus implementing method of claim 6 to supply data for feedback control and comprising of at least:

- i) laser light source;
- ii) plurality of optical elements;
- iii) electronically controlled optical switching device.

Claim 15 (Currently amended)

Method of measuring deformations of plurality of microcantilevers that employs comparisons data from method of claim 6.

Claim 16 (Currently amended)

Apparatus of claim 13 wherein said mechanical elements are microcantilevers and :

- i) wherein each cantilever has light beam focused in its surface;
- ii) said light beam is modulated by intensity, wherein change in modulation results in change of deflection of said cantilever.

Claim 17 (Previously Presented)

Apparatus according to claim 16 further employing method of claim 15, wherein same light beam used in both methods.

Claim 18 (Currently amended)

Apparatus according to claim 17 that employs said data measurements of method of claim 6 to establish feedback that controls cantilever deflection.

Claim 19 (Previously Presented)

Apparatus of claim 16 providing resonance oscillation of said micro cantilever element, wherein said cantilever comprises body and attached integral lever, and wherein said process comprises:

- i) first radiation beam focused on surface of said cantilever and modulated with first frequency
- ii) optional second radiation beam focused on surface of said cantilever and modulated with second frequency

iii) said frequencies are adjusted so one of them or their harmonics nearly match resonance frequency of said micro cantilever.

Claim 20 (Previously Presented)

Apparatus of claim 19 capable to produce oscillation of plurality of cantilever elements.